

*P1 Pct*

consisting of SPEB2, SPEB3, SPEB4, SPEB5, SPEB6, SPEB7, SPEB8, SPEB9, SPEB10, SPEB11, SPEB12, SPEB13, SPEB14, SPEB15, SPEB16, SPEB17, SPEB18, SPEB19, SPEB20, SPEB21, SPEB22, SPEB23, SPEB24, SPEB25, SPEB26, SPEB27, SPEB28, SPEB29, SPEB30, SPEB31, SPEB32, SPEB33, SPEB34, SPEB35, SPEB36, SPEB37, SPEB38, and SPEB39.

3. (Once amended) The vaccine of claim 1 wherein said cysteine protease is a mutant thereof or synthetic peptide thereof.

*Sub H2*

4. (Once amended) The vaccine of claim 1, or claim 3, wherein said [streptococcal] infection is selected from the group consisting of pharyngitis, tonsillitis, skin infections, acute rheumatic fever, scarlet fever, post-streptococcal glomerulonephritis, and toxic-shock-like syndrome.

*F2*

5. (Once amended) The vaccine of claim 1, or claim 3, further comprising a purified streptococcal M protein antigen.

*Sub H3*

6. (Once amended) A method of immunizing mammals [against *Streptococcus pyogenes* infection,] comprising:  
administering [the vaccine of claim 1] to a mammal a vaccine comprising, a purified cysteine protease, synthetic peptide thereof, or mutant thereof, in an amount sufficient to confer immunity to [a *Streptococcus pyogenes*] a Group A streptococcal infection.

*F4*

10. (Once amended) The method of claim 6, wherein said [*Streptococcus pyogenes*] infection is selected from the group consisting of pharyngitis, tonsillitis, skin infections, acute rheumatic fever, scarlet fever, post-streptococcal glomerulonephritis, sepsis, and toxic-shock-like syndrome.

*F5*

12. (Once amended) [A] The method of claim 6 [immunizing mammals against *Streptococcus pyogenes* infection,] further comprising:



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administering [the vaccine of claim 5] to [a] the mammal a purified streptococcal M protein antigen, [in an amount sufficient to confer immunity to a *Streptococcus pyogenes* infection].

Please delete claim 2.

{ Please add the following new claims:

- Subj 12*  
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18. The vaccine of claim 1, wherein said mammal is a human.
  19. The method of claim 6, wherein said mammal is a human.

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#### REMARKS

Applicant has attached a clean copy of all pending claims in this application after amendment.

#### Status of the Claims:

Claims 1, and 3-17 are pending in this application

Claims 1, and 3-17 have been rejected by the Examiner

Claim 2 has been deleted

Applicants wish to thank the Examiner for her time during the recent phone interview on Wednesday January 31<sup>st</sup> of 2001. Claim 2 has been deleted and Claims 1, 3-6, 10, and 12 have been amended for clarity. Support for the recitation "purified" is located on pages 19, lines 20-26 of the specification. Support for the recitation "synthetic peptide" is located on page 30, line 7 through page 32, line 2. Support for the recitation "mutant" is located on page 32, line 4 through page 35, line 1. Support for the recitation "which confers immunity to a mammal against Group A streptococcal infection" can be found in example 14, and Figure 10. Specifically, the Applicants teach that the cysteine protease of the invention may be "any that provokes an immune response" and demonstrate immunogenicity in example 14 (page 7, lines 2-6, pages 27-28). The Applicants also teach "Passive immunization with rabbit antibody directed against purified denatured cysteine protease partially protects mice against challenge with live *S. pyogenes* (Figure 10)" (page 35, lines 4-6). The Applicants teach the alleles that produce the